What is claimed is:

1. A texture image compressing device comprising:

a separating unit configured to separate intensity maps including intensity values and light source-independent texture images including color components from a plurality of texture images corresponding to a plurality of different light source directions and a plurality of different viewpoint directions;

an intensity map compressing unit configured to compress the intensity maps to generate compressed intensity maps and representative intensity maps that are codebooks of the compressed intensity maps;

a light source-independent texture image compressing unit configured to compress the light source-independent texture images to generate light source-independent texture compressed images and color component conversion tables that are codebooks of the light source-independent texture compressed images; and

a compressed texture generating unit configured to generate compressed textures by combining the compressed intensity maps, the representative intensity maps, the light source-independent texture compressed images and the color component conversion tables.

2. The texture image compressing device of claim 1, further comprising:

a normalizing unit configured to normalize, per intensity

map, ranges of the intensity values to generate normalized intensity maps and to generate intensity map correction images from conversion parameters used in normalization; and

an intensity map correction image compressing unit configured to compress the intensity map correction images to generate intensity map correction compressed images and correction image conversion tables that are codebooks of the intensity map correction compressed images;

wherein the intensity map compressing unit compresses the normalized intensity maps and to generate the compressed intensity maps and the representative intensity maps,

wherein the compressed texture generating unit generates compressed textures by additionally combining the intensity maps correction compressed images and the correction image conversion tables.

3. The texture image compressing device of claim 2, wherein the separating unit separates the intensity maps wherein intensity values extracted from the plurality of texture images are grouped per viewpoint direction and coordinate on the texture images.

4. The texture image compressing device of claim 3, wherein the separating unit allocates each of the extracted intensity values to a pixel whose coordinates are obtained by projecting, on a two-dimensional plane where a polar angle is 90 degrees,

a light source direction azimuth and polar angle of the texture images where each of the intensity values has been extracted.

5. The texture image compressing device of claim 4, wherein the separating unit expresses the light source direction azimuth as a relative value corresponding to a viewpoint direction azimuth.

6. The texture image compressing device of claim 2, wherein the normalizing unit normalizes each intensity map so that a minimum value of the intensity values becomes 0 and a maximum value becomes 255.

7. The texture image compressing device of claim 2, wherein the intensity map compressing unit quantizes the intensity maps.

8. The texture image compressing device of claim 2, wherein the light source-independent texture image compressing unit vector-quantizes the light source-independent texture images.

9. The texture image compressing device of claim 2, wherein the intensity map correction image compressing unit vector-quantizes the intensity map correction images.

10. A texture image compressing method comprising:

obtaining a plurality of first images and a plurality

of second images, from a plurality of texture images, corresponding to a plurality of light source directions and a plurality of viewpoint directions, respectively, the plurality of first images including intensity values dependent on the light source directions, the plurality of second images including color components not dependent on the light source direction;

compressing the first images to generate first compressed texture images and first codebooks that are information for decompressing the first images from the first compressed texture images;

compressing the second images to generate second compressed texture images and second codebooks that are information for decompressing the second images from the second compressed texture images; and

generating compressed textures where the first and second compressed texture images and the first and second codebooks are combined.

11. A texture image compressing method comprising:

separating, from a plurality of texture images corresponding to a plurality of different light source directions and a plurality of different viewpoint directions, a plurality of intensity maps whose pixels include intensity values and a plurality of light source-independent texture images whose pixels include color components;

normalizing ranges of the intensity values to generate normalized intensity maps and to generate intensity map correction images from conversion parameters used in normalization;

compressing the normalized intensity maps to generate compressed intensity maps and representative intensity maps that are codebooks of the compressed intensity maps;

compressing the intensity map correction images to generate intensity map correction compressed images and correction image conversion tables that are codebooks of the intensity map correction compressed images;

compressing the light source-independent texture images to generate light source-independent texture compressed images and color component conversion tables that are codebooks of the light source-independent texture compressed images; and

combining the compressed intensity maps, the representative intensity maps, the intensity map correction compressed images, the correction image conversion tables, the light source-independent texture compressed images and the color component conversion tables to generate compressed textures.

12. A texture image decompressing device comprising:

a compressed texture input device inputting a compressed texture into which a plurality of texture images corresponding to respective a plurality of different light source directions

and a plurality of different viewpoint directions have been compressed;

a light source/viewpoint direction input device inputting a viewpoint direction and a light source direction of a decompression target texture image;

a conversion table extracting unit configured to extract, from the compressed texture, representative intensity maps and color component conversion tables;

a data extracting unit configured to extract, from the compressed texture, compressed intensity maps corresponding to the inputted viewpoint direction and light source-independent texture compressed images corresponding to the inputted viewpoint direction;

a light source-independent texture image extracting unit configured to extract light source-independent texture images from the light source-independent texture compressed images by using the color component conversion tables;

an intensity component computing unit configured to compute intensity components of the decompression target texture image by using the representative intensity maps and the compressed intensity maps; and

a texture image generating unit configured to generate the decompression target texture image by using the light source-independent texture images and the intensity components.

13. The texture image decompressing device of claim 12, wherein

the conversion table extracting unit also extracts correction image conversion tables,

the light source-independent texture image extracting unit extracts, from the light source-independent texture compressed images, light source-independent texture images and intensity map correction images by using the color component conversion tables and the correction image conversion tables, and

the intensity component computing unit computes intensity components of the decompression target texture image by using the representative intensity maps, the intensity map correction images and the compressed intensity maps.

14. A texture image decompressing device comprising:

a light source/viewpoint direction input device inputting a viewpoint direction and a light source direction of a decompression target texture image;

a compressed texture input device inputting a compressed texture into which a plurality of texture images corresponding to a plurality of different light source directions and a plurality of different viewpoint directions have been compressed and which includes compressed intensity maps, light source-independent texture compressed images, intensity map correction compressed images, representative intensity maps,

color component conversion tables and correction image conversion tables;

a conversion table extracting unit extracting, from the compressed textures, representative intensity maps, color component conversion tables and correction image conversion tables;

a data extracting unit configured to extract, from the compressed textures, compressed intensity maps and light source-independent texture compressed images corresponding to the inputted viewpoint directions;

a light source-independent texture image extracting unit configured to extract, from the light source-independent texture compressed images, light source-independent texture images and intensity map correction images by using the color component conversion tables and the correction image conversion tables;

an intensity component computing unit configured to compute intensity values of the decompression target texture image by using the representative intensity maps, the intensity map correction images and the compressed intensity maps; and

a texture image generating unit configured to generate the decompression target texture image by using the light source-independent texture images and the intensity values.

15. A texture image decompressing method comprising:

inputting a viewpoint direction and a light source

direction of a decompression target texture image;

extracting representative intensity maps and color component conversion tables from a compressed texture into which a plurality of texture images corresponding to a plurality of different light source directions and a plurality of different viewpoint directions have been compressed;

extracting, from the compressed texture, compressed intensity maps and light source-independent texture compressed images corresponding to the inputted viewpoint directions;

extracting light source-independent texture images from the light source-independent texture compressed images by using the color component conversion tables;

computing intensity components of the decompression target texture image by using the representative intensity maps and the compressed intensity maps; and

generating the decompression target texture image by using the light source-independent texture images and the intensity components.

16. The texture image decompressing method of claim 15, further comprising:

extracting correction image conversion tables from the compressed texture; and

extracting intensity map correction images from the light source-independent texture compressed images by using the correction image conversion tables;

wherein the computation of the intensity components uses the representative intensity maps, the intensity map correction images and the compressed intensity maps.

17. The texture image decompressing method of claim 15, further comprising:

inputting a compressed texture into which a plurality of texture images corresponding to a plurality of different light source directions and a plurality of different viewpoint directions have been compressed and which includes compressed intensity maps, light source-independent texture compressed images, intensity map correction compressed images, representative intensity maps, color component conversion tables and correction image conversion;

extracting correction image conversion tables from the compressed texture; and

extracting intensity map correction images from the light source-independent texture compressed images by using the correction image conversion tables;

wherein the computation of intensity components computes by further using the correction image conversion tables.

18. A computer-readable medium having stored thereon a data structure for storing a compressed texture into which a plurality of texture images corresponding to a plurality of different light source directions and a plurality of different

viewpoint directions have been compressed, the data structure comprising:

a first codebook field including a codebook for decompressing normalization parameters of intensity components of the texture images;

a second codebook field including a codebook for decompressing normalized intensity components of the texture images;

a third codebook field including a codebook for decompressing color components of the texture images; and

compressed texture blocks, each including an identifier representing viewpoint direction, first compressed data obtained by compressing the normalized parameters, second compressed data obtained by compressing the normalized intensity components, and third compressed data obtained by compressing the color components, each of the first, the second and the third compressed data corresponding to the viewpoint direction that the identifier represents.

19. A computer-readable medium having stored thereon a data structure for storing a compressed texture into which a plurality of texture images corresponding to a plurality of different light source directions and a plurality of different viewpoint directions have been compressed, the data structure comprising:

a compressed intensity map field including compressed

intensity maps in which normalized intensity maps have been compressed, the normalized intensity maps having been obtained by normalizing intensity components of the texture images;

a light source-independent texture compressed image field including light source-independent texture compressed images in which color components of the texture images have been compressed;

an intensity map correction compressed image field including intensity map correction compressed images in which intensity map correction images for decompressing intensity components from normalized intensity components have been compressed;

a representative intensity map field including representative intensity maps for decompressing normalized intensity maps from the compressed intensity maps;

a color component conversion table field including color component conversion tables for decompressing color components from the light source-independent texture compressed images;

a scale/bias conversion table field including scale/bias conversion tables for decompressing intensity map correction images from intensity map correction compressed images; and

an identifier field including identifiers representing viewpoint directions, wherein

the compressed intensity maps, the light source-independent texture compressed images and the intensity map correction compressed images are identified by the

identifiers.